TECHNICAL SPECIFICATIONS

WASHINGTON STATE FERRIES

M.V. CHELAN DRYDOCKING

CONTRACT NO. 00-7057

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TABLE OF CONTENTS

ITEM **PAGE**

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TECHNICAL SPECIFICATIONS

For the following Technical Specifications, the Contractor is to provide all labor, material and equipment to accomplish each and every Bid Item unless otherwise specified.

The Specification Item sub-titles in brackets are for WSF internal use only, for Life Cycle Cost modeling. Bidders should ignore such bracketed sub-titles.

1. DRYDOCK VESSEL

{MAINTENANCE}

M.V. CHELAN Vessel Particulars:
Length: 328'-0", **Beam**: 78'-8", **Draft**: 16'-6", **Gross Tons**: 2,475.

A. Drydock Vessel for cleaning, painting, inspections, the Work specified herein, and any necessary repairs.

B. Block spacing shall be at twelve foot (12') centers. Within twenty-four (24) hours of docking, provide three (3) copies of the block position drawing to the WSF Inspector indicating the block positions used.

C. Vessel shall be blocked to expose the block positions used at the previous docking. **Attachment No. 2**, "BLOCK POSITION FORM" showing previous docking position, is provided for reference.

2. TEMPORARY SERVICE

{MAINTENANCE}

A. Install one (1) telephone on board in a location designated by the Vessel Staff Chief Engineer. The telephone is to have one (1) outside line with toll-free access to Seattle and vicinity and, if different, one (1) line for local numbers. The telephone shall have touchtone service if available from the Contractor's telephone system.

B. Provide and maintain electricity, water, safe lighted gangway and trash removal services while Vessel is in the Contractor's facility.

C. Provide safety and security for the entire Vessel throughout this Contract period until such time as the WSF Representative has accepted re-delivery of the Vessel. Every reasonable precaution shall be taken to protect the Vessel from the hazards of fire, flooding, pilferage, malicious damage, and other events including cataclysmic phenomena of nature.

D. Provide and maintain comprehensive and effective fire prevention and fire detection, and fire fighting programs and systems sufficient to ensure the safety and integrity of the Vessel. Provide personnel trained in shipboard fire fighting techniques and also trained to cooperate with and assist local fire fighting organizations. Provide sufficient shore fire lines to ensure an adequate supply of fire fighting water, at sufficient pressure, and maintain an adequate number of tested fire-hoses aboard the Vessel to effectively fight fires at any location in the Vessel.

E. Provide and maintain portable fire extinguishers in sufficient quantity, and of the appropriate type, to combat local fires of any class. Provide sufficient fire watches, including roving watches as may be required, to ensure that fires that may be inadvertently started by welding sparks or heat, electrical malfunction, or spontaneous combustion are detected, reported and promptly extinguished.

3. ZINC RENEWAL
{MAINTENANCE}

A. Renew bolt-on zincs at the following locations:

1. Port and Starboard sea chest, four (4) zinc anodes each (total of eight (8) zincs 6” by 12”).

2. Under both rope guards install four (4) zinc anodes (Two (2) 6” by 12” zinc anodes cut in half per End).

3. Adjacent to each keel cooler at six (6) locations, Six (6) zinc anodes each (total of thirty-six (36) 25 lb zincs).

4. Hub zincs, one (1) each End for a total of two (2); and install zinc bolts using Locktight to keep bolts in place.

4. RUDDER INSPECTION, NO. 1 AND NO. 2 ENDS
{MAINTENANCE}

A. Erect staging or provide suitable man lifting device on both sides of No. 1 and No. 2 End rudders for inspection. Remove staging upon completion of all affiliated work.

B. Drain and pressure test rudders for leaks in the presence of the WSF and USCG Inspectors. Test pressure shall be 42" of water or 1.5 PSI gage pressure.

C. Take and record clearances of rudder pintle and rudder stock bearings on No. 1 and No. 2 End rudders. Submit three (3) copies of a written report within twenty-four hours of inspection to WSF Inspector.

5. PROPELLER INSPECTION, NO. 1 AND NO. 2 ENDS

{MAINTENANCE}

A. Erect and modify staging as required, in area around No. 1 and No. 2 End propellers to accomplish all affiliated work and required inspections in this Item. Remove staging upon completion of all affiliated work and inspections.

B. Polish the No. 1 and No. 2 End propellers by power disk sanding, using 80 grit or finer abrasive.

C. Thoroughly clean Propeller Blades and Propeller Hubs for Nondestructive Dye Penetrant testing/inspection.

D. Conduct a Nondestructive Dye Penetrant test/inspection for cracks and/or other defects on Propeller Blades and Propeller Hubs in the presence of the WSF and USCG Inspector, and the Vessel Staff Chief Engineer. Submit three (3) copies of a written report of findings to the WSF Inspector within twenty-four (24) hours of test completion.

6. CONTROLLABLE PITCH PROPELLER HUB INSPECTION, NO. 1 AND NO. 2 ENDS

{MAINTENANCE}

A. Remove the No. 1 and No. 2 Rudder Blades to the drydock floor.

B. Measure and record the measurements of all rudder bearings including lower and upper rudder stock bearings, pintle pin bushings, pintle pin bearing, and carrier bearing. Visually inspect all bearing surfaces for condition. Ensure proper location and operation of grease passages to the carrier bearing and upper rudder bearing. Provide a written report on all conditions to the WSF Inspector.

C. Have the Vessel's crew pitch the propellers to the full ahead position. Drain and dispose of the oil from the propeller shaft stern tube. Drain and dispose of the oil from the propeller shaft by removing plugs from the hubs. All oil shall be dispose of in accordance with all applicable Local, State and Federal rules, laws, and regulations.

D. Remove the rope guards. Remove the clamp ring from the inboard seal liners and clamp the liners into position so it is not displaced from its running position with the seal housings. Provide rigging support for the inboard end of the tail shaft. Set up to capture any oil present in the coupling prior to splitting the coupling.

E. Disconnect the SKF tail shaft coupling, and drift the coupling out enough to allow the oil tubes to be uncoupled. Disconnect the tail shaft portion of the oil tubes from the intermediate section. Disassemble the O.D. Box portion of the oil tubes enough to allow all of the oil tubes to be withdrawn.

NOTE:
The Contractor is reminded of the shaft grounding assembly in the No. 1 and No. 2 End Tank Rooms which will require lifting of the grounding brushes prior to any drifting of the stern shaft assembly. Any damage caused by failure to raise the brushes and protect the assembly shall be repaired at the Contractor's expense.

F. Remove all propeller blades from the hubs. Remove the end plate from the hubs, and disconnect the oil tubes from the propeller control rods. Push the seal liners and bolt covers forward, and remove the hub mounting bolts. Remove the propeller hubs from the tail shaft using the WSF furnished lifting fixture. Protect the propeller hubs from contamination.

G. Remove the Propeller Shaft and Oil Tubes in order to remove No. 1 and No. 2 Outer and inner shaft seals as in Item 7. Upon completion of installing the Inner and Outer shaft seals reinstall Propeller shaft and Oil Tubes.

H. Remove the hubs from the Vessel to clean facility. Provide the services of a Rolls-Royce Marine Representative to perform the inspections outlined in the Issaquah Class Propeller Hub Service Manual for every 2nd and 5th year.

I. Perform a Nondestructive Dye Penetrant test/inspection for cracks and/or other defects of the tail shafts in way of the hub mounting flange, holes and radius in the presence of the WSF and USCG Inspector, and the Vessel Staff Chief Engineer. Submit three (3) copies of a written report of the findings to the WSF Inspector.

J. Open and clean system sump, piping and hoses to the satisfaction of the WSF Inspector and Vessel Staff Chief Engineer.

K. Re-mount the hub, propeller blades with new Contractor furnished blade seals, washers and all other required Items.

NOTE:
Torque blade bolts to 1,880 FT. LBs.

L. Upon completion of assembly of the Controllable Pitch Propeller System, and in the presence of the Vessel Staff Chief Engineer, WSF and USCG Inspectors, verify the "A" dimension with the blades pitched to "Blade Tram" marks to ensure that each system is pitching properly.

M At the start, during and completion of the CPP work, the Contractor shall provide the pumping and cleaning of all bilge in areas affected by the Work.

N. Load WSF furnished oil on board. Refill the shaft and propeller system with the WSF furnished oil.

O. Re-install the rope guards.

P. Reinstall No. 1 and No. 2 Rudders.

Q. Conduct an operation test of both rudders to the satisfaction of the WSF Inspector and Vessel Staff Chief Engineer.

7. WAUKESHA SEAL REPLACEMENT, NO. 1 AND NO. 2 ENDS {MAINTENANCE}

A. Erect, modify, and remove staging in the area around No. 1 and No. 2 End Propellers as required to accomplish all affiliated work and inspections.

B. Remove the existing Inner and Outer seals and Liners. Replace with new WSF supplied outer Eagle Seals and Liners. Provide the services of an authorized Eagle Seal Service Representative during the installation of the new Seals and Liners. The Eagle Seal Service Representative is: Sound Propeller, 1608 Fairview Ave. E., Seattle, WA. 98102, Phone No: (206). 325-5722.

NOTE:
Removal of shafts, rudders and oil tubes are in Item No. 6

C. Drain all oil from the outer Waukesha oil seal system, including the stern tube cavity. Dispose of oil (approximately **350 gallons**, each End). Clean the head tank and the bilge sump tank. Flush the piping from the head tank to the bilge sump tank by using ten (10) gallons of clean system oil poured down the piping from the head tank to the bilge sump tank. Clean flushing oil from the bilge sump tank. Close up the head tank and sump tank with new Contractor furnished fasteners and gaskets.

D. Using a feeler gauge to take stern tube bearing clearances. Exercise care with the feeler gauge so as not to break off leaves in the bearing. Submit three (3) copies of a written report of the readings to the WSF Inspector.

E. Take bearing wear down readings after installation of seals, in the presence of the WSF Inspector and the Vessel Staff Chief Engineer. Submit three (3) copies of the written reports of the readings to the WSF Inspector. Upon completion of taking wear down readings and approval of the WSF Inspector, lock wire the liner and housing fasteners. Fill the outer seal with Hyperlube or STP.

F. Fill the stern tube system with WSF furnished oil.

G. Prior to installing the rope guards remove the existing zincs and replace with new Contractor furnished split ring zincs, (as in Item 9.)

H. Take run out readings on the face of the propeller and the counter bore for the seal. Dial in the outboard liner after propeller installation, run out not to exceed .005". Reading to be witnessed by the WSF Inspector and the Vessel Staff Chief Engineer. Submit three (3) copies of a written report of the readings to the WSF Inspector.

I. Transport the removed outer Waukesha Seals and Liners to the WSF Warehouse at 6th Ave. South, Seattle, WA. Inform the WSF Inspector 24 hours prior to transporting them. Provide the WSF Inspector with three (3) copies of the inventory list of transported equipment.

PAINTING OF VESSEL AND HULL PRESERVATION

Special Note

ATTACHMENT NO. 1

Area Preparation, Surface Preparation, Grit Blasting, Paint Coatings, and Inspection for Vessel's hull, curtain plates, casing and super structure shall be in accordance with Washington State Ferries Marine Coating Specification 01/03 unless otherwise specified in the following Specifications.

8. FRESH WATER WASH OF VESSEL HULL

{MAINTENANCE}

A. Within twenty-four (24) hours of drydocking the Vessel, perform a Low-Pressure Water Cleaning (LP WC) at 3,000-3,500 PSI. in accordance with SSPC-SP 12/NACE 5. The wand shall be held no more than twelve (12) inches from the surface being washed. The entire hull from the top of the Guard to the Keel, including, flat keel, all horizontal and vertical surfaces of the guard, rudders, sea chests, sea chest strainers, propellers shall be washed. The wash shall leave no visible growth or residue after the hull dries from washing.

B. Sea chest strainer plates shall be removed for cleaning, preparation and painting and reinstalled upon completion of all related work and inspection.

9. PREPARATION OF VESSEL HULL FOR GRIT BLASTING {MAINTENANCE}

NOTE:

Care shall be taken to avoid damage to the CAPAC anodes and reference cell. The anodes are located at frame 54 port and starboard, both Ends, approximately nine (9) feet above the keel. The reference cell is located on the starboard side toward the No. 1 End.

A. Provide covering and protection on propellers, propeller bearings, exposed shafting, CAPAC anodes and reference cells, all through-hull penetrations and entrance ways to protect and prevent grit blast material from causing damage or entering the Vessel. Blank the main sea chest openings from inside while the valves are removed for maintenance, so the valve mounting flange may be painted on the inside.

B. Prior to Blasting and upon removal of protective Items an inspection will be required by the Contractor, WSF Inspector and Vessel Staff Chief Engineer.

10. BLASTING AND ANTI-CORROSION COATING OF THE GUARD {MAINTENANCE}

NOTE:

For purposes of bidding assume that **600 Square Feet** of the Guard will require grit blasting to SSPC-SP6, Commercial Blast Cleaning. Upon completion of the grit blast, the Contract will be adjusted upward or downward to account for the actual scope of grit blasting authorized by the WSF Inspector.

Note:

The Contractor shall have the option to UHP-WJ4, Ultrahigh-Pressure Water Jetting only if the hull profile is taken and is within the required profile in **Attachment No. 1** and approved by the WSF Inspector.

A. Prepare areas of abrasion and corrosion on the horizontal and vertical surfaces (top, bottom, and side) of the guard, as authorized by the WSF Inspector, to an SSPC-SP6, Commercial Blast Cleaning.

B. The coating, for at least two (2) inches bordering the blasted area, shall be feathered to a smooth surface.

C. Apply one (1) coat of INTERNATIONAL Intertuf 262 Series epoxy, Red, to a minimum of 5 mils (DFT) to all prepared surface areas repaired in this Item.

D. Apply one (1) coat of INTERNATIONAL Interguard 262, Buff, to a minimum of 5 mils (DFT) of contrasting color to all surfaces painted in paragraph “C” of this Work Item.

11. PAINTING OF VESSEL GUARD, FULL COAT
{MAINTENANCE}

A. Apply one (1) coat of INTERNATIONAL Intercare 755, Black, to a minimum of 2 mils (DFT) to all surfaces of the Guard (top, bottom and side).

12. BLASTING AND ANTI-CORROSION COATING, OF THE HULL
{MAINTENANCE}

NOTE:
For bidding purposes, assume that **5,000 Square Feet** of hull below the guard will require grit blasting to SSPC-SP 6, Commercial Blast Cleaning. Upon completion of hull grit blasting, the Contract will be adjusted upward or downward to account for the actual scope of grit blasting authorized by the WSF Inspector.

NOTE:
The Contractor shall have the option to UHP-WJ4, Ultrahigh-Pressure Water Jetting only if the hull profile is taken and is within the required profile in **Attachment No. 1** and approved by the WSF Inspector.

A. Prepare areas of abrasion and corrosion on the hull from below the guard down to the keel, including flat keel surface, sea chest, strainer plates and rudders, to an SSPC-SP6, Commercial Blast Cleaning as authorized by the WSF Inspector.

B. The existing coating, for at least two (2) inches bordering the blasted area, shall be feathered to a smooth surface.

C. Apply one (1) coat of INTERNATIONAL Intertuf 262 epoxy, Red, to a minimum of 5 mils (DFT) to surface areas prepared.

D. Apply one (1) coat of INTERNATIONAL Intertuf 262 epoxy, Gray, to a minimum of 5 mils (DFT) to all surfaces painted in paragraph “B” of this Work Item.

13. CAPASTIC REPAIRS
{MAINTENANCE}

A. Repair any areas of failed capastic around the CAPAC anodes using ‘Capastic’ epoxy troweling compound made by ELECTROCATALYTIC, INC. The capastic shall be applied to a minimum thickness of 1/8 inch in the area of the shield out from the faired in area around the anode.

NOTE:
For bidding purposes, assume that **25 Square Feet** of failed capastic will require repair. The Contract will be adjusted upward or downward to account for the actual application of Capastic authorized by the WSF Inspector.

NOTE:
Build up a minimum of 22 mils (DFT) of epoxy Anti-Corrosion Coating over the repaired capastic areas and the secondary dielectric shield areas.

14. PAINTING OF VESSEL HULL, BELOW WATERLINE ANTI-FOULING (SPOT COAT)
{MAINTENANCE}

NOTE:
For purpose of bidding assume that **3,000 Square Feet** of the hull will require the FIRST coat of ANTI-FOULING coating. The Contract will be adjusted upward or downward using the square footage determined in Grit Blasting of the Hull Item.

A. Apply one (1) coat of INTERNATIONAL Interspeed Anit-fouling, BRA 640 RED, to a minimum of 4 mils DFT to all surfaces painted below the waterline in the Blasting of the hull and Anti-Corrosion Coating Item.

B. 15. PAINTING OF VESSEL HULL, BELOW WATERLINE, ANTI-FOULING (FULL COAT)
{MAINTENANCE}

A. Apply one (1) full coat of INTERNATIONAL Interspeed Antifouling 642, black, to a minimum of 6 mils (DFT) to all surfaces of hull below the waterline.

16. DRAFT MARKS AND HULL MARKINGS
{MAINTENANCE}

A. Repaint all draft marks and underwater hull markings, using INTERNATIONAL Interlux Y5584, Shark White.

17. PAINTING OF VESSEL HULL, ABOVE THE WATERLINE
{MAINTENANCE}

NOTE:
For purpose of bidding assume that **2,000 Square Feet** of hull above the waterline will require painting. The Contract will be adjusted upward or downward using the square footage determined in Grit Blasting Hull Item.

A. Apply one (1) coat of INTERNATIONAL Intercare 755, WSF Green, to a minimum of 2 mils (DFT) to all surfaces painted above the Waterline.

18. PREPARATION AND PAINTING ABOVE THE VEHICLE DECK {MAINTENANCE}

NOTE:
For bidding purposes, assume that a total of **2,000 square feet**, in various areas will require SSPC-SP 3, Power Tool Cleaning and will be coated with two (2) coats of INTERNATIONAL Intertuf 262 series Epoxy, 5 mils (DFT) each coat; apply a topcoat of INTERNATIONAL Intergard Epoxy Acrylic FT series at a minimum of 2 mils (DFT) to match existing color. Upon completion of the preparation, the Contract will be adjusted upward or downward to account for the actual area authorized by the WSF Inspector.

A. Prepare various areas above the vehicle deck, as authorized by the WSF Inspector, to an SSPC-SP3, Power Tool Cleaning.

B. Apply two (2) coats of INTERNATIONAL Intertuf 262, to a minimum of 5 mils (DFT) each coat for a total of 10 mils (DFT), to the prepared surfaces. The back sides, corners and sharp edges of all angles, rat holes, weld seams, scallops, and beams shall be hand-striped with a brush using Intertuf 262.

C. Apply a topcoat of INTERNATIONAL Intercare 755, to a minimum of 2 mils (DFT) of proper color to all surfaces painted in above paragraph B.

19. CHARGE AIR COOLING SYSTEM MODIFICATIONS {PRESERVATION}

A. Install new keel coolers for the existing ships service generators as shown on **Attachment No. 3,** WSF Dwg. 8300-650-001-01 Issaquah Class Ship Service Generator Keel Cooler Modifications, Rev. B, dated 11/3/05; **Attachment No. 4,** WSF Dwg. 8305-650-074-01, titled "SSDG Cooling Piping Modifications", Rev. -, dtd 11/03/05; **Attachment No. 5,** WSF Dwg. 8305-585-091-03, titled "Charge Air Cooling Pumps Wiring Diagram, Rev. -, dtd 11/17/03; **Attachment No. 6,** WSF Dwg 8305-650-091-05, titled "M/V Chelan Ship Service Generators Charge Air Cooling Pumps Wiring Diagram - Ripout", Rev. -, 9/15/05.

B. Install new keel coolers and angle coolers as shown on **Attachment No. 3**. When installing angles on the hull, extend the angles to enclose the gap shown on **Attachment No. 3**, details 15-A, 19C and 20A.

C. The Contractor shall supply, mount and install six (6) zinc anodes, (twenty-five pounds (25 lbs.) each) at each of the newly installed Keel Coolers and angle coolers adjacent areas. Installation of new zincs shall be similar in location of the existing keel cooler zinc anodes position.

D. Install new piping for the generator cooling systems as shown on **Attachment No. 4**.

E. Remove the salt water piping, duplex strainer, valves, plate heat exchanger, salt water pump and overboard for the ship service generators as shown on **Attachment No. 4**. Fabricate new deck plate gratings in way of the removed the pumps, strainers and heat exchangers to match the surrounding grating height.

F. Wiring shall be modified in accordance with **Attachment No. 5 and 6.** Holes in switchboard face shall be plugged.

G. Flush new piping to remove all foreign material and debris.

H. Conduct a hydrostatic test of the new system to 150% of the system operating pressure in the presence of the WSF Inspector and the Vessel Staff Chief Engineer.

NOTE:
The new cooler shall only be tested to the manufacturers recommended test pressure.

I. Conduct a nondestructive Dye Penetrant, water pressure or vacuum box test of the new hull inserts as approved by the WSF Inspector in the presence of the WSF and Coast Guard Inspectors.

J. All new and disturbed piping and steel shall be painted to match surrounding area.

K. Upon completion of the installation conduct an operational test of the new system installation. The Vessel's crew will operate the generator.

L. For internal hull areas, prepare new and disturbed areas in way this work to an SSPC-SP 3, Power Tool Cleaning. Apply two (2) coats of INTERNATIONAL Intertuf 262 Epoxy, 5 mils (DFT) each, on prepared surfaces.

M. For internal hull areas apply a topcoat of INTERNATIONAL Intercare at a minimum of 2 mils (DFT) of proper color, on required surfaces.

N. Exterior Hull areas will be painted in conjunction with the hull painting Items.

20. ENGINE ROOM ACOUSTIC ENCLOSURE
{VESSEL PROJECTS}

A. Fabricate and install a sound-proofed enclosure for the crew to access the engineer's day room from the engine room as shown on **Attachment No. 7**, Dwg 8305-583-007-01, titled "MV CHELAN, Acoustic Enclosure Engineer's Day Room / ER No. 1 Arrangement and Details", Rev. A, dated 11/03/2005. The boundary between the new enclosure and the engine room shall be constructed to B-15 fire rating.

B. The new steel structure shall consist of the following components:

1. A new structural frame to contain and support the new acoustical panels with structural supports below. Existing vertical grating supports shall be used where possible to avoid welding on the tank top.

2. A new deck section to support the new floating deck of the enclosure.

C. Provide and erect temporary protection for all equipment in the engine rooms that may be contaminated or damaged during this work. The protection shall include, but not be limited to, fabric and temporary wooden structures. No parts of any existing equipment are to be used as footholds or supports for personnel during this work. After the completion of the installation, remove all temporary protections and restore the work areas to their original condition.

D. The Contractor may temporarily remove existing equipment, fixtures, piping and electrical cables in order to carry out the work. Reinstall all temporarily removed Items to their original location. All Items that may interfere with or be damaged by the work to be performed shall be protected or removed and reinstalled. These Items may include, but are not limited to, piping, insulation, ceiling panels, light fixtures, cableways and bulkhead-mounted equipment inside the engine room, and Day Room. Temporarily removed Items shall be reinstalled by the same method to their previous location. Equipment damaged in the removal process shall be repaired, replaced or restored to original condition.

E. Modify and/or relocate the existing inclined ladder between the dayroom deck and the engine room floor plate level to suit the new arrangement, as shown in **Attachment No. 7**. Provide new padeyes and deck reinforcements for the inclined ladder at its new location.

F. Remove the existing engine room floor-plate and associated supports in the area of the new enclosure. Relocate one (1) existing light fixture in way of the new enclosure to the exterior (approximately six (6) feet from the existing location). The Vessels Staff Chief Engineer will designate the exact location. Install two (2) additional light fixtures on the inside of the enclosure as shown in **Attachment No. 7** and connect them to the nearest emergency circuit.

G. Relocate the existing carbon dioxide piping, fuel oil piping and plumbing piping in way of the new enclosure to a location above and/or away from the enclosure.

H. Prepare new and disturbed areas in way this work to an SSPC-SP 3, Power Tool Cleaning. Apply two (2) coats of INTERNATIONAL Intertuf 262 Epoxy, 5 mils (DFT) each coat, on the prepared surfaces. Apply a topcoat of INTERNATIONAL Intercare at a minimum of 2 mils (DFT) of proper color as required.

I. Provide and install new joiners inside the new enclosure as shown in **Attachment No.7**. The joiner systems shall be installed per manufacturers' recommended details. In particular, the interface between the joiner ceiling and joiner lining is critical to the overall sound attenuation. The new joiner lining shall be Norac C-600-50 mm, or equal, with a B-15 fire rating and 42-db sound reduction rating.

J. Provide new joiner ceiling inside the new enclosure. The new joiner ceiling shall be compatible with the bulkhead panels with a B-15 fire rating and 42 db sound reduction rating.

K. Provide an A-60 floating floor on top of the new platform in accordance with **Attachment No. 7**. The floating floor shall be Norac F-300, or equal, with an A-60 rating. The floating floor shall be made of panels that are 1970 mm by 300 mm, tack-welded on 10- inch centers. The top surface of the panels shall be 3 mm galvanized steel sheets. The seams in the floating floor shall be caulked and gray dielectric matting installed.

L. Provide an acoustical door in the inboard bulkhead of the new enclosure. The door shall be an A-60 weather-tight door as manufactured by McGeoch Marine Limited or equal approved by WSF, due to superior acoustic properties of the product. Equal acoustic performance shall be demonstrated for any proposed equal. The door shall be fitted with gaskets and a closure device. The leaf of the new door shall swing into the enclosure. Provide hinges Lawrence #8881151-32-D heavy-duty ball bearing 4½ x 4½. Provide lockset Best 34H-14J626-mortise type. Provide door closer LCM Model 4041.

M. Modify the existing inboard surface of the engine room day room to accept the new enclosure. The existing insulation contains lead sheathing. Portions of this insulation are to be removed to allow structural fit-up and welding. The remaining insulation shall be preserved. Upon completion of the installation the bulkhead shall be repaired to original condition. All material and workmanship shall comply with the U.S. Coast Guard requirements. Furnish all necessary documentation to demonstrate such compliance.

N. Relocate the existing workbench and its light fixture to a new location as determined by the Vessel Staff Chief Engineer. In way of the newly relocated workbench and its light fixture, provide and install a new duplex receptacle powered from the nearest circuit.

O. Just outboard of the two (2) existing pipe fittings cabinets, located approximately between Frames 8 ½ and 11 ½, provide and install a new floor plate grating level (about 3' x 7'), about 12" above the existing inboard grating level. New grating supports, plates, and fasteners shall be similar in kind and method to the existing, and to the extent that is practical.

P. Relocate clothes washer/dryer and associated piping as determined by the Vessel Staff Chief Engineer.

Q. The Contractor shall provide pipe or cable penetration as required and as shown on **Attachment No. 7.**

21. DRYDOCKING REFERENCE VIDEO (MAINTENANCE)

A. While the Vessel is in drydock make a video tape in VHS format of all external areas of the underwater hull including rudders, stern frames, skegs, propellers, tail shaft/seal areas, hull protective systems, keel coolers, sea chests, hull reference markings and all other attached appurtenances. A narrative that unambiguously identifies the location of all objects and markings video taped shall be made as part of the video.

B. The video is to be made after all underwater work is complete, just prior to undocking of the Vessel. The lighting shall be sufficient to insure clear definition of all objects video taped. Background noise shall be minimized while making the narrative. Provide three (3) copies of the video to WSF.

NOTE:
This video is for submission to a Regulatory Body and requires clarity and audibility to satisfy their requirements.

22. REPLACE HULL ANODE {MAINTENANCE}

A. Replace the existing No. 2 End Starboard hull CAPAC ANODE, Capastic and Epoxy.

NOTE:
WSF will supply the Anode. Contractor shall provide the Capastic and Epoxy.

B. Remove the existing anode, epoxy and Capastic. Install covers over hull penetrations to prevent grit blast material from entering Vessel during grit blasting of hull.

C. Grit blast areas of the Capastic and anodes to remove all of the capastic to an SSPC-SP10, Near-White Blast Cleaning.

D. Install the new Capac Anode. In the presence of the WSF Inspector and Vessel Staff Chief Engineer, conduct meggar and electrical tests to ensure the new installation is properly installed. Provide the WSF Inspector with three (3) copies of the meggar and electrical test results.

E. In the presence of the WSF Inspector and Vessel Staff Chief Engineer, conduct a satisfactory test to insure installation is watertight. Provide the WSF Inspector with three written (3) copies of the test results. Any leakage will be repaired at the Contractors expense.

F. Apply the capastic around the CAPAC ANODES; the capastic shall be applied to a minimum thickness of 1/8 inch in the area of the shield in area around the anode. Build up a minimum of 22 mils (DFT) of epoxy Anti-Corrosion Coating over the applied capastic areas and the secondary dielectric shield areas.

23. FIRE PUMP SEA STRAINERS, NO. 2 END RECONNECTION {MAINTENANCE}

A. Remove both Fire Pumps suction strainers housings on the No. 2 End, turn strainers 180 deg, and reinstall with Contractor furnished new Gaskets and bolts.

B. Upon completion of installation, tests all disturb piping and connections for leakage. Any Leakage will be repaired at the Contractors expense.

24. HULL SEA CHEST OUTER HINGE SCREENS RELOCATION {MAINTENANCE}

A. Clean and gas free the voids/bilges associated with the work, as necessary, and obtain a Marine Chemist certificate for "SAFE FOR WORKERS" and "SAFE FOR HOT WORK". Maintain the certificate during the course of the work.

B. Remove existing welded hinges on hull sea chest screen plate.

C. Re-install screen plate with hinges welded on the INSIDE of the Sea Chest.

D. Test affected areas and inspect weld for cracks and leaks in presence of/and to the satisfaction of WSF and USCG Inspector, and Vessel Staff Chief.

E. For exterior of hull: Prepare and paint as part of the hull Items.

F. For interior of hull: For internal hull areas, prepare new and disturbed areas in way this work to an SSPC-SP 3, Power Tool Cleaning. Apply two (2) coats of INTERNATIONAL Intertuf 262 Epoxy, 5 mils (DFT) each, on prepared surfaces.

G. Any Leakage will be repaired at the Contractor's expense.

25. INSPECT ALL SEA CHEST VENT LINES {MAINTENANCE}

A. Clean Sea Chest Vent line piping from the sea chest vent valves to three (3) feet inboard to an SSPC-2, Hand Tool Cleaning.

B. Inspect for rust, pitting, corrosion, leaks and cracks. Provide the WSF Inspector with three (3) copies of the results of the test.

C. Prepare new and disturbed areas in way this work to an SSPC-SP 2, Hand Tool Cleaning. Apply two (2) coats of INTERNATIONAL Intertuf 262 Epoxy, 5 mils (DFT) each coat, on prepared surfaces.

26. REPLACE RUDDER GROUND STRAPS
{MAINTENANCE}

A. Remove existing Rudder Ground Straps on the No. 1 and No. 2 Ends, and install new Contractor furnished "in kind" Ground Straps on both Ends.

B. Conduct test for proper connection and provide the WSF Inspector with three (3) copies of the test results.

END